“ANALYSIS OF DIFFERENT PLAYING POSITION FOR WINNING OR LOSING IN HANDBALL MATCH"

A Research proposal
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CHAPTER -1
INTRODUCTION

Handball is hugely evolved through a long period of time from ancient to modern time. Famous Greek epic “THE ODYSEEY” traces Handball inscription and not only Greeks, Romans were also fan of game similar to Handball. The modern Handball game has been developed by Denmark. Holger Nielsen holds the credit for formulating the rules and marking the start of the game. German gymnastics teacher, Max Heiser popularized this sport in 1917 in Germany. Handball is hugely popular sport around the European and American continent and is known for its speed. Handball popularity is increasing day by day because of minimal ground and equipment facilities required along with exclusive technical skills makes it more popular. Handball is a game where players are assigned different names, keeping the goalkeeper a reference point so that a defender on the right is against the attacker on the left. The positions of the player in handball are assigned under two categories namely offensive positions & defensive positions.

Handball is one of the most popular team sports in the world. There are six confederations and 209 affiliated countries to the IHF (International Handball Federation), with approximately 795,000 teams and 19 million players. The rising popularity of handball is aligned with a significant increase in the number of related scientific publications. A game’s analysis and also individual players’ actions analyses, is a research field that plays a very significant role at the statistical analysis of a game. This kind of analyses, provide players, with the necessary feedback so for the games as for the trainings, as well. Descriptive – statistical analysis, allows the comprehension of the relations among these factors that can lead to victory, providing a better perception of the outcome and the requirements of the game. According to this, game’s analysis provides with the evaluation ability of the basic individual and group characteristics of the team and helps the coach to interfere by comprehending advantages and disadvantages and consequently to amplify the training plan. In team handball, the termination of an attacking activity is determined through shooting action (shoot) and the total result of this action, reveals not only, the total offensive activity of the team, but also, the rational activity of the defending team. On the other

side, it is essential, within a game analysis, that, all these parameters that determine the playing activity are taken into consideration [1]. Handball is a complex sport in which players' performance can be analyzed and presented in various manners. Additionally, is considered a transition game, as players often alternate between defensive and offensive play and the actions of the match are characterized by alternations between running and sprinting. Technical skills, anthropometric characteristics, and high levels of muscle strength and speed are the most important factors in gaining an advantage in elite handball competitions. However, success in collective sports requires that a team integrate many factors beyond physical factors. Specifically, in male handball, effectiveness of positional attacks and shooting efficiency in the offensive process were important performance indicators that distinguished winner and losers teams. On the other hand there are six offensive indicators that differentiated winners from losers: goals at 6 m, total goals, total shots, shots at 9 m, counterattacks, and assists [10]. In recent years, huge strides in performance levels have been made in the practice of handball due to the evolution of playing systems, as well as the attainment of higher levels of professionalization in the technical staff and players. As a result, the level of play in the different championships in this sport has improved exponentially [4]. Handball is an invasive cooperation opposition sport. Scoring more goals than the opposing team guides the strategic facet as a primary aim [5].

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1.1 STATEMENT OF THE PROBLEM

The purpose of this study is to predict match winner and loser of Handball through logistic model. The secondary purpose of study is to identify the dominant abilities which have to be considered for winning and losing a game. The Objectives of the study predict match winner and loser of Handball through logistic model to state the problem as "Analysis of Discriminatory Game Variables For Winning Or Losing In Handball Match: A Logistical Regression Approach".

1.2 Hypothesis

1. There will be no significant difference between the observed value and the model prediction.
2. There will be a significant difference between the observed value and the model prediction.

1.3 Significance of the study

1. This study will help for future preparation or training of team.
2. Study will improve and provide better knowledge in the field of handball.
3. The study will provide an opportunity to the different team to identify their strength and weakness.
4. The study will be helpful for the coaches.
5. It will provide knowledge to yield the dominant factors which are important for match result.
6. Study will be significant in extending the horizon of knowledge in the field of Handball.
7. The study will provide an opportunity to identify the dominant factors which are pivotal for match results.
8. The study will provide an opportunity to the different team to identify their strength and weakness.
9. The study will be helpful for the coaches and officials to develop their match strategies.
10. Result of the study will help in preparing the training schedules of Handball players.

1.4 Objectives

1. The primary objective of this study is to find the various factors responsible for the winning and losing match of handball.
2. To study the accuracy and precision of shot in place skill of handball players.
3. The study of self awareness in international handball matches.

4. To suggest method of management and prevention of wrong steps taken by the handball players which directly affect the winning and losing of match.

1.5 Limitations of the Study

1. An observational prediction model has its limitation. Any bias that might have crept into the researcher thought during observation can be considered as a limitation of the study.
2. Individual performances can affect the overall fitness of the model.

1.6 Definition and explanation of the terms

1. Analysis :
   A detailed examination of anything complex in order to understand its nature or to determine its essential features : a thorough study.

2. Discriminatory:
   Making or showing an unfair or prejudicial distinction between different categories of people or things, especially on the grounds of race, age, or sex.

3. Game:
   An activity that one engages in for amusement or fun.

4. Variables:
   Not consistent or having a fixed pattern; liable to change.

5. Winning:
   Gaining, resulting in, or relating to victory in a contest or competition.

6. Lossing:
   Suffering, resulting in, or relating to defeat in a game or contest.

7. Handball:

Handball is a team sport in which two teams of seven players each (six outcourt players and a goalkeeper) pass a ball using their hands with the aim of throwing it into the goal of the other team. A standard match consists of two periods of 30 minutes, and the team that scores more goals wins.

8. Regression:

   Regression is a statistical method used in finance, investing, and other disciplines that attempts to determine the strength and character of the relationship between one dependent variable (usually denoted by Y) and a series of other variables (known as independent variables).

CHAPTER- 2

REVIEW OF RELATED LITERATURE.

Alexis & et al. (2017) explain the differences between winning and defeated A1 handball women's teams, based on the analysis of the final offensive and technical errors during games that ended up to three goals difference. Through the Mann-Whitney U test, between 20 matches, the main results are as follows: The winning teams showed a larger total number of throws, with more throws from 9m, and lateral side, more penetrations and more counterattacks. The final effectiveness of the goalkeepers of the winning teams differed significantly ($p < .001$) from those of the losing teams. Winning goalkeepers had an average of 1.8 more saves per match. The winning teams performed on average significantly more fouls than the losers ($p = .02$), recording 8.6 more per match. In addition, the winning teams made significant ($p = .03$) less breaches of regulations that change the possession of the ball, with losers registering an average of 2.2 more offenses per match. The defending actions (fouls), technical mistakes, and overall performance of the goalkeeper appear to be the main factors that separate the winners from the losers in women's matches between equal opponents [1].

Jaime Tuquet and et al (2021) determinant factors that affected throwing actions used to score goals in handball, and to study the effectiveness of throwing actions and their relationships with different factors during their use, such as: the throwing distance, type of arm build, type of throw, whether it is done while jumping or while supported, the last supporting foot and the previous step cycle, as well as their relationship with the final score of the game in elite male handball competitions [2].

Keczelei Danica and et al shows the therapeutic work of a professional men’s handball team and demonstrate the nature of the social environment and how it can have an effect on their performance. The author examines how a team forms, develops and works and what factors contribute achieving the optimum performance. The functions, structures, dynamics and goals of an adult team were analyzed and on top of that the focus was on the three-month long therapeutic process and its results as well. The conclusions of this work can be useful for further talent managment and development [3].

Mario Amatria and et al (2020) explained that winning is the ultimate goal of high-performance sports. Accoriding to them in handball, a sport in which the number of goals scored is high, identifying the small details and the factors that lead to the team's success is of particular importance to elite athletics. In their study they focused on identifying the technical differences and levels of association with teammates evinced by centers in teams who win and lose in their offensive phase. For this purpose, they used an observational methodology, taking all the offensive actions of the centres in all the matches played during the 2017-2018 Asobal Cup as the sample and creating an ad-hoc instrument called the Inob-FOB to record the data [4].

Miguel Pic and et al (2018) focused on the main objective of delve into the concept of playing handball at home from a classical perspective of previous studies. The emergence of regularities or certain patterns of play can be explained by the location of matches. Through an observational methodology and a nomothetic, monitoring and multidimensional design, thirty-nine European elite handball matches were selected (N = 39) [5].

Ferrari W & et al (2020) determine the differences related to the offensive process between winning and losing teams among teams participating in the European Handball Federation Champions League (EHFCL) in 55 matches across five seasons. The key indicators used in this study are the offensive actions, team possession type and the zones of the field, goals, and shooting effectiveness. A total of 34 indicators were analyzed and compared using Mann–Whitney U tests. Sixteen key indicators are identified to confirm differences both from the aspect of the collective game in terms of assists (9.10 ± 2.75 vs. 7.29 ± 2.65), goals of positional attack (21.38 ± 4.60 vs. 18.20 ± 3.62) and from the aspect of individual goals from 6 m (16.67 ± 3.98 vs. 13.64 ± 3.70), and the effectiveness of shots (68.19 ± 6.83 vs. 59.41 ± 6.33). Winning teams performed better regarding the variables that defined the effectiveness of offensive shots, especially successful positioned attacks and fast attacks. They also had a greater number of assists. The profiles of the most successful teams can help coaches and practitioners to achieve better performances adjusting the training process according the performance indicators that seem to lead more often to success [6].

Ferrari W & et al (2019) focused on a systematic review of the literature on handball, to identify potential areas for future research in this specific area of specialization. The most common research topics were identified, their methodologies were described, and the evolutionary tendencies of this

area of research were systematized. Within a systematic review of the Web of Science Core Collection, PubMed, and SportDiscus databases, according to the PRISMA guidelines, the following keywords were used: “handball”, each one associated with the terms: “match analysis”, “performance analysis”, “notational analysis”, “game analysis”, “tactical analysis”, and “patterns of play”. Of the 245 studies initially identified, 28 were fully reviewed, and their results were analysed. Studies that meet all the inclusion criteria were organized according to the research design as descriptive, comparative, or predictive. The results showed that most of the studies use the statistics available through the tournament organization; some researchers have attempted to find some association between cause and effect in different contexts. The studies focused their analysis on four main variables of performance: total shots and finals, end match outcome, Time Outs (TTos), and the relationship between home advantages.

CHAPTER - 3

METHODOLOGY

The present research involves the use of Observation Method for the data collection. Observation is a technique that involves systematically selecting, watching, listening, reading, touching, and recording behavior and characteristics of living beings, objects, or phenomena.

Procedure

In this part the procedure adopted in selecting the matches and analysis of recorded video available on IHF and Asian handball federation, variables, criterion measures along with the procedure used in the collection of data and the statistical techniques used in the analysis are described.

Selection of Matches

To identify the factors which determine the winning of Handball game, the 2018 ASIAN Handball matches will be considered in this study. These matches will be recorded and an expert team will carefully extract the information required. Handball game at the Asian Games was held at the POPKI, Sports Hall, Jakarta, Indonesia.

1. Average Number of Passing.
2. Number of 7 Meter score.
3. Number of Counter attack/Rapid play.
4. Successful throw on goal.
5. Number of personal/technical foul.
6. Numerical Advantage.
7. System of offensive play/defensive paly systems
8. Successful defenses/successful offenses.
9. Total Number of Attack

Criterion Measure

1. Average age of the team- Average age of the team can be defined as the mean age. This will be calculated by the following formula.

$$\frac{SUM\ OF\ THE\ TEAM\ MEMBERS}{NO.OF\ THE\ TEAM\ MEMBERS}$$

2. Average number of team passes- A pass consists of an intentional transfer of the ball from one player to another of the same team.

3. Average pass of a team = (Number of passes made by the team)/(Total number of passes in the game)

4. Successful defenses-A successful defense will be considered when the defending team has not committed any offensive defense resulting in penalty or goal keeper successfully saved the ball entering the goal post.

5. Successful offense- A successful offense will be considered when the offensive player team has scored a goal either from 6m or 9m line.

6. Number of successful Fast breaks- A successful fast break will be considered when either team has intercepted other team ball and converted it a goal.

7. Number of technical fouls- Any card, suspension or free throw will be consider for the technical foul.

8. Number of penalty's score-A penalty is result from any technical foul.

In order to develop the predictor model multivariate technique Logistic Regression with alpha value fixed at 0.05 (=0.05) will be used in IBM SPSS 20.0

Time Schedule

Sr. No.	Activities	Estimated Time
1	Make a introduction	
2	Collect different reviews	
3	Survey in area	
4	Collect data	
5	Data interpretation	
6	Results, findings	
7	Discussion and conclusion	
8	Recommendation	

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